

Remarks

Claims 1-37 were initially pending in the subject application. In response to a restriction requirement, claims 1-32 were elected for examination. Certain of the claims have been amended for the purpose of expediting the patent application process in a manner consistent with the Patent and Trademark Office Patent Business Goals (PBG), 65 Fed. Reg. 54603 (September 8, 2000) and facilitate the business interests of Applicant(s). Support for these new claims and the amendments to the pending claims can be found throughout the subject specification, including, for example, page 9, lines 20-30 and page 21, at lines 3-6. Favorable consideration of the claims now presented, in view of the remarks and amendments set forth herein, is earnestly solicited.

Claims 9-32 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in the recitation of "is capable of", "in small steps", and "in a humid atmosphere". Applicants respectfully submit that this rejection is moot in view of the amendments made to the claims.

Claims 1-8 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Corbett *et al.* (US 5,270,183). This rejection is respectfully traversed. As the Patent Office is aware, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Corbett *et al.* disclose a method for cyclically heating and cooling a reaction mixture in continuous flow. A reaction mixture is injected into a stream of carrier fluid in which the reaction mixture is immiscible. The stream of carrier fluid is then brought into contact with a plurality of different temperature zones, each temperature zone being held at a predetermined temperature (column 3, lines 21-33). In preferred embodiment, the method is used for PCR, and the carrier fluid flows through a tube, which passes through a plurality of zones at differing temperatures (column 4, lines 24-40).

In contrast, the subject invention is directed to a method of performing a chemical or biochemical protocol in which liquid samples are continuously moved through at least one temperature-regulated zone wherein the temperature regulated zone cycles between at least two temperatures. Corbett *et al.* do not teach such a method, rather Corbett *et al.* disclose the use of

multiple fixed-temperature (*i.e.*, non-cycling) zones. Because the reference fails to teach the limitations recited in the claims (namely that each temperature regulated zone cycles between two temperatures) it is respectfully submitted that the reference fails to anticipate the subject invention. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Claims 9-21 and 25-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by Taylor *et al.* (U.S. Patent No. 6,375,817). This rejection is respectfully traversed. Taylor *et al.* disclose a method for forming sample plugs for analysis on a microscale. A sample is introduced into a sample introduction channel 10, which forms a junction 11 with separation channel 12. By alternately applying pressure and/or suction to the channels, discrete sample plugs are formed, which are then subjected to separation in the separation channel 12. At column 10, lines 6-9 a sample delivery device/reactor (device) is described. The delivery device can deposit liquid sample volumes into a plurality of sample receiving regions. The Office Action has also pointed to column 12, lines 36-61 in support of the rejection of record. The passage in question describes the sample delivery device/reactor depicted in Figures 5 and 6. This device has an array of capillaries 28 in thermal association with a temperature control device 32. Each capillary has one end sealed near the temperature control device 32. Sample may be drawn into the open end of the capillary by heating the closed end to expel gas, replacing the capillary in the sample and then cooling the closed end of the capillary to contract the gas and thus draw in sample. Once sample is in place in the sample delivery device of Taylor *et al.*, a second temperature control device 42, "placed at a position on the reactor occupied by the PCR reagents" and controls thermocycling. However, it is important to note that the sample remains stationary in the capillary (the sample is taken up into and expelled from the open-end of a closed end capillary under the action of temperature control device 32) and does not continuously move through a temperature-regulated zone. Claim 9 requires that the samples be deposited on a mobile transport member that is then moved along a pathway such that the sample continuously moves through at least one temperature-regulated zone (which cycles between at least two temperatures while the sample moves through the temperature regulated zone). Furthermore, it is apparent that the sample does not move at all during PCR temperature cycling which is carried out by temperature control device 42. Taylor *et al.* state at column 11, lines 13-17:

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By heating a discrete portion of the capillary where the reagents and sample are located, the temperature of the reaction may be controlled without moving the sample within the capillary.
[emphasis added]

Thus, it is respectfully submitted that the reference fails to anticipate the claimed invention because the methods described in Taylor *et al.* fail to teach a sample that continuously moves through a temperature-regulated zone; accordingly, reconsideration and withdrawal of the rejection of record is respectfully requested.

In view of the foregoing remarks and the amendments to the claims, the applicant believes that the pending claims are now in condition for allowance, and such action is respectfully requested. The Commissioner is hereby authorized to charge any fees under 37 CFR §§ 1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

Applicants also invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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Enclosures: Marked-Up Version of Amended Claims
Petition for 3-Month Extension of Time

MARKED-UP VERSION OF AMENDED CLAIMSClaim 1 (Amended):

A method of performing a chemical or biochemical protocol comprising:

cycling at least one thermal transfer member between at least two temperatures while liquid samples on which said chemical or biochemical protocol is to be performed are continuously moving through at least one temperature regulated zone upon which said at least one thermal transfer member acts, such that the sample is brought to at least two temperatures in said at least one temperature regulated zone.

Claim 9 (Amended):

A method for carrying out a chemical or biochemical protocol comprising:

depositing liquid sample volumes into a plurality of sample receiving regions on at least one mobile sample transport member; and

moving the sample transport member along a pathway such that said sample receiving regions move through at least one temperature regulated zone upon which a thermal transfer member acts, wherein said ~~thermal transfer-transport member is capable of cycling cycles~~ between at least two temperatures while said sample receiving regions are moving through said at least one temperature regulated zone.

Claim 21 (Amended):

The method of Claim 9 wherein said sample transport member moves along said pathway in ~~small~~-steps.

Claim 24 (Amended):

The method of Claim 9 wherein the protocol is carried out in ~~an humid-atmosphere~~ sufficiently humid to reduce or prevent evaporation of the liquid sample volumes.

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COMPANY: U.S. Patent Office, Art Unit 1637 **DATE:** December 16, 2002
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SUBJECT/MESSAGE: U.S. Patent Application Docket No. G-069US02CIP
(Fouillet *et al.*)
METHOD FOR CARRYING OUT A BIOCHEMICAL PROTOCOL
IN CONTINUOUS FLOW IN A MICROREACTOR
Serial No. 09/772,280; Filed January 29, 2001

Attachments: Amendment Under 37 CFR § 1.111
Petition for 3-Month Extension of Time

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